

Report of the SCIENTIFIC BOARD

Halothane (Fluothane®)

INQUIRIES as to the use and the safety of the anesthetic agent halothane (Fluothane®) having been received, the Committee on Scientific Information of the Scientific Board has prepared the following statement.

Halothane is a potent anesthetic agent that may be used to provide any degree of anesthesia without supplemental agents, although it is not often given alone. Like almost all useful drugs, it is not without danger.

The chemical formula is 2-bromo-2 chloro-1:1:1-trifluoroethane. It is a liquid with the following physical properties: It is nonflammable and nonexplosive in the concentrations used in clinical anesthesia; the specific gravity is 1.86 at 20°C; the boiling point is 50.2° at 760 mm of mercury; it has vapor pressure of 241.5 mm of mercury at 20° C; solubility in water is 0.345 parts in 100; and the oil-water solubility coefficient is 330.

In practice halothane is usually deliberately combined with other drugs to afford deeper anesthesia or to increase relaxation. It must be given in special vaporizers and by competent anesthetists who are thoroughly familiar with all its actions. The safest means of vaporization at present is with the Fluotec®* apparatus, which is temperature-compensated and flow-compensated, or with one of the devices† in which oxygen is bubbled through the agent and then diluted with an additional quantity of oxygen and possibly nitrous oxide. It is usually administered by either non-rebreathing or the partial rebreathing techniques and only rarely in a completely closed system.

Since halothane depresses the respiratory center, it is necessary to assist or control respirations in every case in which it is used.

Bradycardia and hypotension result from (1) a depression of the myocardium, (2) an increase in the vagus tone on the pacemaker and (3) peripheral vasodilatation. As the heart is sensitized to epinephrine and similar drugs which may then produce cardiac arrhythmia, it is preferable to avoid this combination.

Halothane causes relaxation of the uterus and should, therefore, probably not be used in obstetrics except when a very light stage of anesthesia will suffice or when uterine relaxation is desired.

Like ether, halothane supplements the relaxation of curare and its congeners, and for that reason relatively smaller amounts of these relaxant agents should be given with halothane. As an alternative, succinylcholine chloride might be used instead of the curare drugs for relaxation in cases in which halothane is used.

In a few cases, use of halothane for anesthesia has been followed by hepatitis and jaundice. The incidence is apparently extremely small (about one in a million) and a causal relationship has not been established.

Halothane has proven to be a very satisfactory anesthetic for patient, surgeon and anesthetist when used with care and complete understanding of its pharmacologic properties.

Warning— Tetracycline and Pregnancy

THE COMMITTEE on Maternal and Child Care of the CMA sounds a warning for all physicians caring for pregnant patients to use extreme caution when considering the use of tetracycline intravenously in the treatment of infections in pregnant women until further studies are available.

There have been two recent reports in the literature^{1,2} describing fatty metamorphosis of the liver as the cause of death in pregnant patients with pyelonephritis who were treated with large intravenous doses of tetracycline. Recently, an additional case (as yet unreported) which seems entirely similar in course and fatal outcome, has been described in California.

The typical case is one of a pregnant patient, usually in the latter half or immediately post-partum, with typical symptoms and signs of acute pyelonephritis, who is admitted and, after appropriate diagnostic study, given large doses (3 to 5 grams) of tetracycline intravenously daily for several days. The patient at first improves; then, after three to five days, jaundice and severe vomiting develop, requiring parenteral fluids to prevent fluid and electrolyte imbalance. Typically, the course is then rapidly progressive, with acidosis, azotemia, hematemesis, melena and hypotension terminally unresponsive to treatment. The entire hospital stay of these patients from admission to death has been short—five to thirteen days.

COMMITTEE ON MATERNAL AND CHILD CARE
OF THE SCIENTIFIC BOARD

REFERENCES

1. Horowitz, S. T., Marymont, Jr., J. H.: Fatal liver disease during pregnancy associated with tetracycline therapy: report of a case, *Obst.-Gyn.*, 23:826, 1964.
2. Schultz, J. C., and others: Fatal liver disease after intravenous administration of tetracycline in high dosage, *N.E.J.M.*, 269:999-1004, 1963.

Prepared by the Committee on Scientific Information of the California Medical Association.

*Made by Cyprane, Ltd.

†Copper Kettle (Foregger Company), Vernitrol (Ohio Chemical Company).